IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently Amended) An interpolation filter for ~~filtering a digital input signal whose amplitude response exhibits a lowpass-type attenuation curve in the useful signal frequency band Δf_{nutz} of the digital input range~~ sampling frequency conversion of a digital input signal, the interpolation filter comprising:

   (a) a filter coefficient generator for generating various sets of filter coefficients as a function of a base function (BF), wherein the base function (BF) is generated on the basis of a time-limited power sine function $h_1(t)$,

   wherein each of the various sets of filter coefficients has in a useful signal frequency band Δf_{nutz} of the digital input signal as an essentially equal amplitude response and different group delays τ,

   wherein the filter coefficient generator selects that filter coefficient set whose group delay τ has a minimal deviation from a set desired group delay;

   (b) a multiplier for multiplying the digital input signal by the filter coefficients of the selected filter coefficient set; and

   (c) an accumulator for accumulating the digital input signal weighted by the multiplication with the filter coefficients of the selected filter coefficient set.

2. (Currently Amended) [[An]] The interpolation filter according to claim 1, wherein the base function (BF) is generated by a logic operation from the time-limited power sine function $h_1(t)$ and a first order sample and hold function $h_2(t)$ ~~for filtering a digital input signal whose amplitude response exhibits a lowpass-type attenuation curve both inside and outside the useful signal frequency band Δf_{nutz}~~.

3. (Previously Presented) The interpolation filter as claimed in claim 1, wherein connected downstream of the interpolation filter is a highpass filter for compensating the lowpass-type amplitude response.

4. (Currently Amended) The interpolation filter as claimed in claim 1, wherein the group delay τ of the interpolation filter runs ~~in an~~ is essentially constant ~~fashion~~ in the useful signal frequency band Δf_{nutz} ~~of the digital input signal~~.

5. (Previously Presented) The interpolation filter as claimed in claim 1, wherein the digital input signal is an equidistant digital signal with a predetermined clock pulse period T_{in}.

6. (Previously Presented) The interpolation filter as claimed in claim 1, wherein the group delay τ of the interpolation filter can be set inside a clock pulse period T_{in} of the digital input signal.

7. (Previously Presented) The interpolation filter as claimed in claim 1, wherein the ratio of the clock pulse periods of the digital input signal T_{in} and the digital output signal T_{aus} filtered by the interpolation filter can be set.

8. (Currently Amended) The interpolation filter as claimed in claim 3, wherein the interpolation filter and the downstream highpass filter together exhibit a [[sinc]] sine filter characteristic.

9. (Previously Presented) The interpolation filter as claimed in claim 1, wherein a further interpolation filter can be connected upstream of the interpolation filter for the purpose of constricting the useful signal frequency band Δf_{nutz}.

10. (Original) The interpolation filter as claimed in claim 9, wherein the interpolation filter that can be connected upstream is a polyhase filter.

11. (Currently Amended) The interpolation filter as claimed in claim 1, wherein by a storage device is provided for storing the base function (BF) ~~it has:~~
~~a filter coefficient generator for generating filter coefficients as a function of a base function BF;~~
~~a multiplier for multiplying the digital input signal by the generated filter coefficients, and~~
~~an accumulator for accumulating the digital input signal weighted by the multiplication~~.

12. (Currently Amended) The interpolation filter as claimed in claim 1, wherein a controllable switching device is provided for reading out the weighted digital input signal as a digital output signal ~~defined by a storage device for storing the base function~~.

13. (Currently Amended) The interpolation filter as claimed in claim 1, wherein the accumulator comprises an adder and a register whose output is fed back to an input of the adder ~~defined by a base function generator for generating the base function as a function of fundamental functions~~.

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Currently Amended) A method for digital interpolation of a digital input signal, ~~having the following steps~~ the method comprising:
(a) receiving a digital input signal with a predetermined clock frequency f_{in};
(b) providing a base function (BF) on the basis of a time-limited power sine function $h_1(t)$;

(c) calculating various sets of filter coefficients as a function on the base function (BF),
wherein each of the various sets of filter coefficients comprises, in a useful signal frequency Δf_{nutz} of the digital input signal, an essentially equal amplitude response and different group delays τ;

(d) selecting a filter coefficient set whose group delay τ has a minimal deviation from a set desired group delay τ_{SOLL};

(e) multiplying the digital input signal by the filter coefficients of the selected filter coefficient set; and

(f) accumulating of the digital input signal weighted by the multiplication with the filter coefficients of the selected filter coefficient set.

~~determining filter coefficients of a settable interpolation filter whose amplitude response exhibits a lowpass-type attenuation curve in the useful signal frequency band of the digital input signal;~~

~~(c) filtering the digital input signal by means of the set interpolation filter.~~

18. (Currently Amended) The method ~~as claimed in~~ according to claim 17, comprising generating the base function (BF) by a logic operation from the time-limited power sine function $h_1(t)$ and a first order sample function $h_2(t)$ ~~in which the filter coefficients of the interpolation filter are determined as a function of a base function BF~~.

19. (Currently Amended) The method as claimed in one of claims 17 and 18, comprising storing ~~in which~~ the base function (BF) ~~is stored~~ in a memory.

20. (Canceled)

21. (Canceled)

22. (Currently Amended) The method as claimed in claim [[21]] 17, in which the ~~first fundamental~~ time-limited power sine function $h_1(t)$ function is as follows:

$h_1(t) = \sin[t \cdot \pi / n]^m \cdot \sigma(t) - \sin[t \cdot \pi / n]^m \cdot \sigma(t-n)$

$m, n >= 1 \quad m, n \in R,$

$\sigma(t-n)$ being the unit-step function at the instant n.

23. (Canceled)

24. (Currently Amended) The method as claimed in claim 21, in which the ~~second fundamental~~ first order sample and hold function $h_2(t)$ function is as follows:

$h_2(t) = \sigma(t) - \sigma(t-n),$

$\sigma(t-n)$ being the unit-step function at the instant n.

25. (Canceled)